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MICROSCOPIC INVESTIGATION ON THE ELECTRO-MAGNETIC FORM FACTORS OF PROTON

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The present work is devoted to analyzing the electric and magnetic form factors of proton in the frame of relativistic constituent quark model, since the elastic nucleon form factors carry essential information of nucleon structure. Several existing facilities around the world have been currently going on special experimental studies. To facilitate our calculations, the light-front (LF) formalism of the relativistic three-body kinetics is adopted. We derived the formulae of both form factors in a way which can allow us to do computation easily. The proton LF wave function is chosen that can take into account the SU(6) breaking effects and has a radial Gaussian ansatz with harmonic oscillator parameters. The calculations of six-dimension integrals are performed by using Monte Carlo method. Related computational results are presented and discussed. It is found the numerical results of the ratio of proton electric and magnetic form factors are in the satisfying consistence with the recent measured results.

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